
From the Desk of Bill Johnson

Right before this issue was being sent to the printer we received some news that you will want to hear. Sinclair Research Ltd. has sold its personal computer business to Amstrand in England. Some of you may not have heard of Amstrand. Amstrand is one of England's largest computer manufacturers. We are not sure of the exact date or of all the details of this buy-out. We should have more news by the next issue.

So what does this mean to us in the United States? Probably very little. The U. S. market seems to survive anything. QL owners may be the only ones to feel anything from this transaction. But, I also have good news for them. Sinclair's entire U. S. inventory of QL computers, software, and repair parts has been purchased by A+ Computer Response. A+ Computer Response is now in the process of establishing Authorized Dealers. If you wish to write to A+ Computer Response for a list of Authorized Dealers their address is 69-B Island St, Keene, NH 03431.

You will receive this just in time for the Midwest Timex/Sinclair Computerfest. Which is being held on May 3rd & 4th at the Ramada Inn in Sharonville, Ohio. The show is being held from 9:00 AM to 5:00 PM both days. The Ramada Inn is located on I-75 in Sharonville just outside of Cincinnati. Tickets are available at the door. Many dealers and manufacturers will be attending the Computerfest showing off their newest products for all Timex/Sinclair computers. Guest speakers, including Thomas B. Woods, Pro-File, will be giving lectures and answering questions you may have. A swap shop will also be in session during the Computerfest. If you have the chance stop in at the Computerfest and see what's new in the T/S world. We are sorry we couldn't let you know about this sooner, but the notice came too late for the last issue.

You may be tired of hearing this but we need articles, programs, reviews...for upcoming issues of QuarTerS. We especially need submissions for the TS1000, as you can see this issue has very little on the TS1000. We also need articles on the QL. Does anyone want to start a column for the QL? We pay for all articles, programs and reviews used in an issue. Our rates are listed on the inside back cover. Please help the T/S survive.

Until next time...

TELL YOUR FRIENDS ABOUT QuarTerS.

THANKS FOR SUBSCRIBING!

DEAR QTS:

In looking over several of my publications that have program material for the 2068, I am surprised to find that almost none of them use the apostrophe to get a line feed in their program. Instead, they use PRINT, LPRINT and even REM.

For example, in the program on page 10 of QTS WINTER-86, Line 38 could read: PRINT '''' and Line 130 could read LPRINT''.

Another neglected program technique seems to be the use of FN and DEF FN. As an example, that same program has eight lines of TAB 16 less the length of a string, divided by 2. This can be expressed as: DEF FN P(m\$)-16-(LEN m\$/2). Now Line 14 can be written: PRINT TAB FN P(a\$);a\$ and Line 122 could be written LPRINT TAB FN P(b\$);b\$, etc. It appears to me that this method reduces key strokes and reduces potential for typographical errors.

Keep up the good work in providing applications information. A lot of us need that and need less of the publications written by electronic technicians! I think "LabelMaker" is a handy program.

A short while ago, I bought a Star SG-10 printer to use with my 2068. I am happy with it but still have some things to learn. If any other SG-10/15 owners out there would like to trade questions and answers, let's try. I have found some unconventional solutions to using SG-10 with the 2068.

Sincerely,
Austin White
Hollywood, MD.

Dear Austin:

Thanks for the programming tips. You are right when you state that you don't see these techniques used much. I believe that this comes from the fact that many programmers writing programs for the 2068 learned programming on the TS1000 which does

not have these commands. They may have also learned programming on other computers many of which don't use these commands.

I hope that you and other readers will write in with some tips on using the Star SG-10 printer, as it is a very popular printer among T/Sers.

Sincerely,
Bill

DEAR QTS:

Being a true TS1000 addict I must tell you that I truly enjoy QuarTerS. I look forward to your replies to letters from readers and the few and far between articles on the 1000.

Four years ago at this time I did not know the first thing about computers and then the TS1000 went on sale for less than \$100. From that point on it has been my first love (next to my wife and family).

I have added a keyboard, a 64K Rampack, Winky Board II, 2040 printer & ZXLR8 fast load/save program, to have a system that does all that I require my computer to do.

I have owned a Vic-20, a TI 99-4A, an Adam (on which this letter is being written) and have worked with a Commodore 64, HP, IBM PC, TRS-80 and Apple II, but still come back to my first love to do any serious programming. As you can see, the sound, color and graphics of the biggies does not turn me on.

I started learning programming to do some specific tasks with data and, after these last two years, have accomplished most all of them thanks mostly to magazines like yours, Synchro-sette, Sync, TX User Newsletter and Magazine, Syntax Quarterly, Syntax, BASIC and TS Horizons, to name a few. Most of which, have since, bitten the dust.

I do believe that the 2068 should not be in the same magazine with the ZX or TS. If I want color or sound to

play with I can turn on a color TV. The true purpose of a computer is to compute, not to draw pictures and play music.

So much for my ramblings. I shall now get to the point of why I am writing this letter in the first place. One of the main uses of VAL I make, is the use of a dimensioned string where data can be compacted and used as a string or numeric output. Example: DIM A\$(20) could store the name of a bowler on a bowling team and their respective scores. Using VAL A\$(12 TO 14) + VAL A\$(15 TO 17) + VAL A\$(18 TO 20) to output their series score and A\$(TO 11) for the bowler's name. In this way also, strings can be used in DATA like statements in a program and can be picked apart by the use of the VAL function.

I have written a few programs that some of your readers may be interested in, such as, Biorythms, Bar Graphs, Sorting Lists, Gas Mileage, Vehicle Maintenance Schedule, Predictions and Standard Deviation. I very much enjoy the challenge of writing programs for data files and statistic files for sports teams. If anyone would have a special application that they would need some help with, I would be happy to lend a hand.

My family and friends have been urging me to sell some of the programs I have written, but I really don't know how to go about it. I would appreciate any suggestions that you may have concerning this inquiry.

Very respectfully,

John P. Baney
Box 993, Twp. Rd. 2946 Route 1
Perrysville, OH 44864

Dear John

Thanks for the encouraging words on QuarTerS and for sending such a useful letter. We have received quite a few letters from TS1000 users who mentioned that they would like to

see more on these machines. I took a look at all of our past issues and found out that we have covered the 1000 and 2068 with just about equal space. There may be slightly more space on the 2068 but this is the type of articles we receive from our readers.

You also mentioned that the 2068 should not be in the same magazine as the 1000 and that if you wanted color or sound you would turn on a color TV. The 2068 has a few advantages over the stock 1000: a nice key board, 1/3 of the loading and saving times, and a few extra programming commands like READ, DATA, ON ERR, LINE... Now I'm not putting down the 1000 which is an excellent machine. Your configuration probably set you back about \$250 or more. The 2068 was introduced at about \$200 and is now available at between \$99 and \$140. The abilities to draw and of sound have excellent uses in computing. Engineering and many of the sciences use the drawing capabilities of computers through the use of CAD, Computer Aided Design, programs. I recently talked to a mechanical engineer who is in charge of crews building sky scrapers in Manhattan. He was telling me about the computer system they use which enables them to printout a blue print of a building at any view they want. This saves countless man hours. They simply input a normal blue print in to the system and then the computer makes all the computations and prints out a new blue print from any view possible. The use of sound is also useful when you want to let the user know that a response is needed from him or that a program has finished loading or saving. How about the use of the computer for the visually impaired?

I hope I haven't rambled on too much. We would be interested in receiving any programs you may want to send in. We will look them over and consider them for publication.

I receive at least three or four requests a week on how to go about marketing programs. The best advice

I can give is to send them to a software publisher. Now in the T/S industry the only software publishers available are some of the larger T/S dealers around. Send your programs to some of these dealers and they may be interested in marketing them for you. You may want to write first and give a complete description of the program and ask them if they would be interested. But please don't expect to get rich in the T/S industry.

I have printed your name and address so that some of our readers can take you up on your offer of programming help. It would be appreciated if you would share these with us. A copy of the letters sent would be enough for us to include in a future issue of QTS.

Sincerely,

Bill

DEAR QTS:

As a subscriber of QuarTerS I have nothing but words of praise. I read every issue from front to back. Thus I am coming with an inquiry on the TS2068: How about a good emulator for the Commodore 64 system on an EEPROM as there are quit a number of really good programs available for the 64. Do you know of someone who could do it--please let me know.

Sincerely,
C. H. Rink

Dear C. H. Rink:

It sounds like a good idea. But I believe it would be almost impossible and very costly to emulate the Commodore 64 on the TS2068. With the C64 low prices, C64 and disk drive for about \$275.00, it would not be feasible. I have experience with the C64 and have found the 2068 to be a much better machine and most programs to be better. The C64 is rather sluggish when it comes to calculations and loading and saving times on the 1541 disk drive to be very slow, over 1 minute depending on

program. The 2068 equipped with a disk drive puts the C64 to shame.

If you need a particular program for the TS2068 write in and we should be able to come up with a source for you. Don't forget about over 3,000 programs for the Spectrum, which can be used on the TS2068 with a ROMSWITCH attached.

Sincerely,
Bill

DEAR QTS:

Keep the information on the TS1000 coming. As you can see from the list of equipment at the bottom of this letter I have a good bit invested in that model.

I use the programs for a number of useful purposes: The two programs I use the most are FastFile and ZX Profile, but a number of other ones to a lesser degree.

AT HOME:

- *Check register and bill aging programs.
- *Amateur radio record keeping - these were the first programs I purchased.
- *Amortization tables, perpetual calenders, etc.

AT OUR RETAIL STORE:

- *Check register and bill aging.
- *Daily and monthly sales summaries.
- *Vegetable seed labels, about 6,000 for next year.
- *Price tags, when I get the key punch work done.
- *Mailing list and postcard advertising.

I now have the Byte-Back UM-64. I have read the instructions carefully and they suggest using the memory above 32K to "hide" machine code. So the modification has been done.

I am using a TS1000 with Byte-Back UM-64 memories, about a month old, Suntronics keyboard, dual Aerco disc drives, Aerco CP ZX printer interface. This is being printed on

my C. Itoh 1550 printer which has a 15 inch carriage for the price labels. I have a Gorilla/Banana at the store, I also have an Olivetti Ink Jet printer which I have not been able to make work with my interfaces yet. The word processor is by SirusWare and is called WPRD.

I have dual systems, one at home and one at the retail store, the only difference is the printer.

Thanks again for your help,

Jim Scherer
Garden Center, Inc.
Richmond, IN

Dear Jim:

It looks like you are a dedicated T/Ser. Has any one gotten the Olivetti Ink Jet printer to work with the AERCO CP ZX Interface on a TS1000? Please write in and let us know.

Sincerely,
Bill

PROGRAM TO REFORMAT AND PRINT by Chuck Dawson

Why do I own a computer? Well, like any good hobby, it gives me pleasure. One of the nicest feelings is what you get after attacking a problem and solving it. For those of us with limited problem solving capacity, a small problem will do. Take, for instance, the problem of printing out text from a Bulletin Board System on an 80 column printer. That is not hard in itself, but to get a decent looking document, you must first do a set.column command to get you 80 column width (or 64 or whatever). But the story looks funny as it is printed on the screen, with words being broken right in half at the end of every other line. So the problem is: how to capture the article in 32 columns so it looks OK on the screen and then LPRINT it at 80.

The following program seems to solve the problem. Type it in carefully. The only changes allowed are in line 5. Set your line length as desired, then save the program to tape. Now, when on the BBS, just open the buffer, capture an article, and close the buffer, leaving columns set at 32 for best presentation on the screen. Then, after logging off, MERGE the program. If you LOAD, you will wipe out the article. Now RUN, assuming you already have the printer driver in place. The program should break between words at about the line length you specified. Paragraphs should be unaffected. Here it is:

```

5 LET L=64
10 LET K=27031: FOR I=K TO PE
EK 23627+256*PEEK 23628-1
15 IF PEEK I=13 AND (PEEK (I+
1)>32) OR PEEK (I+1)=12) THEN P
OKE I,32
20 IF PEEK I=13 OR I=K THEN L
PRINT CHR$ 13; GO TO 50
30 IF PEEK I<>12 THEN LPRINT
CHR$ PEEK I;
40 NEXT I: STOP
50 FOR K=L TO 0 STEP -1
60 IF PEEK (I+K)=32 OR PEEK (I
+K)=45 THEN LET K=K+1:GO TO 40
70 NEXT K

```

QTS

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REVIEWS: TS2068 BASIC COMPILERS
by Thomas Beutel

COMPASS

MANUFACTURER:
JRC SOFTWARE
PO Box 448
Scottsburg, IN 47170

AVAILABILITY: Directly from the
manufacturer or from many T/S
dealers.

SUGGESTED RETAIL: \$19.95.

ZIP COMPILER

MANUFACTURER:
KNIGHTED COMPUTERS
707 Highland St
Fulton, NY 13069

AVAILABILITY: Directly from
manufacturer or from many T/S
dealers.

SUGGESTED RETAIL: \$16.50.

Although the TS2068 has a powerful implementation of BASIC as its main language, programs execute fairly slowly because they are not run in the machine's native language (Z-80 machine code). If you need speedy programs, one option is to learn machine code, but writing machine code is generally time consuming and tedious. The other option is to buy a compiler, which converts your BASIC programs to machine code for you. Two BASIC Compilers are available for the TS2068. The restriction is that they only implement subsets of the full BASIC language, so you can't use all of the instructions that you are used to.

Both compilers are reasonably priced BASIC programs that convert BASIC directly to machine code. Both have good documentation, and Compass also includes program examples. They allow you to test your BASIC code in interpreted mode before compiling it. Both compilers allow integers only and have restrictions on the use of

strings. I generally found a speed increase of 5 to 10 times, but this varies widely depending on what instructions you use.

The first question that came to my mind was whether the compilers could compile themselves. The answer is no, because they were not written with the above-mentioned restrictions in mind. This means that the actual compilation process may take many minutes, but of course you only need to do this once after you have debugged the program.

To make a direct comparison between the two compilers would be unfair, because they implement different subsets of BASIC. What follows is a list of instructions that both have in common, but keep in mind that there are some restrictions on their use also:

AND AT BORDER BRIGHT CHR\$ DIM GOSUB
GOTO IF IN INK INVERSE LET OR OUT
OVER PAPER PAUSE PEEK PLOT PRINT POKE
REM RETURN RAND STOP TAB THEN USR

The ZIP Compiler also includes: ABS
ATTR BIN CLEAR DRAW FLASH FOR INPUT
INT NEXT NOT SCN STEP and TO. The Compass Compiler on the other hand has: BEEP COD COPY INKEY\$ LPRINT POINT and SOUND. The Zip Compiler is more flexible in its use of numeric expressions, and Compass is more flexible in its use of strings. Which one to use depends much on what type of application you have.

In my opinion these compilers are best used with game applications or simulations where speed and animation is needed. With this in mind, it would have been nice to have the STICK instruction, but both compilers lack this. The compilers are somewhat harder to use when extensive string handling is needed, and you can't use them at all if you need floating point numbers. You could speed up complex programs by just compiling certain segments and calling them with the USR instruction. But overall, they represent a good value if you have specific applications that you need

to speed up.

EDITOR'S NOTE: It should also be noted that the COMPASS software package also comes with an Z80 Machine Language Assembler, for use when writing machine language programs.

QTS

CLASSIFIED ADS

FREE ADS: Subscribers to QTS are allowed one free classified ad per issue. The only requirement is that it not be commercial in nature. The ad should be 37 characters per line with a maximum length of 10 lines. Want to sell some of your dusty equipment or start a user group? Send in your ad and reach thousands of T/Sers. Commercial ads: Rates are \$4.00 per line-minimum of 3 lines.

FOR SALE: TS2068 computer, westridge 2050 modem, Aerco Centronics parallel printer interface, Fun Golf, and States and Capitals cassette software, Flight Simulator cartridge, and books included. Excellent and great working condition, only \$175.00. Contact: Mike Collins, 5916 Arno Crescent, Anaheim, CA 92807.

WANT YOUR MICRO TO DO SOMETHING YOU HAVE NOT SEEN SOFTWARE FOR? I will do Custom Applications Programming. Send a SASE for details to: JBAPE, Box 993 RT #1, Perrysville, OH 44864.

TS2068 BASIC TUTOR by Warren Fricke

EDITOR'S NOTE: Please note that the following paragraph was omitted from Mr. Fricke's WINTER 1986 column, it should have been the penultimate paragraph:

You will notice that there is a value of 60 already in Line 70. It was put there because I would like you to INPUT the copyright symbol when the program is RUN, and 60 is the value in the top byte of this character. In case you forgot, the copyright symbol is on the P-key. But to get it you have to be in the E mode first. Then touch the CAPS SHIFT and the P-key. Why pick on the copyright symbol? It is the only one of the regular characters that has a value other than zero in the top byte. In other words, this method of print position detection isn't much good for use with the regular characters. But it works well with graphics and UDGs if they have some value other than zero in the top byte. If you would have several characters to detect and distinguish between, simply construct them with UDGs having different top lines.

PRINT POSITION by USING THE DISPLAY ADDRESS

This is the fourth article in a series that discusses the various means that TS2068 BASIC provides for identifying a character in the print position. One or more of these methods is employed in almost every game program. For continuity, you may want to refer to the preceding articles that appeared in the last three issues.

In this issue we will make use of a property that defines the ON and OFF condition of the INK pixels in each of the eight rows of pixels that make up a single character block. Refer to page 164 of the Manual. Two characters are illustrated, the letter E and the fraction 1/4.

In the top row of the letter E no pixels are turned ON; so the value in the address that represents this row is zero. In the second row six pixels are turned on and this particular group of pixels corresponds to a decimal value of 126. The third row has one pixel turned ON and by its position in the row corresponds to 64. And so forth, for the other five rows.

The display file starts at address 16384 and ends with 22527 for a total of 6144 bytes. These addresses fully cover all 24 screen rows of 32 characters each, with each character having eight addresses, each holding a value that together describes it. The Manual on page 251 states that it (the display file) is rather curiously laid out. But there is a definite arrangement. And, if we let L be the screen row number, and C be the column number, and B be the position of the byte in the character itself, starting with zero at the top and 7 at the bottom, the relationship can be expressed by...

DISPLAY ADDRESS =

16384 +

2048 * INT (L/8) +

32 * (L - 8 * INT (L/8)) +

256 * B + C

What this formula does is to give the address of any of the eight bytes of any character on the screen, knowing the screen row and column numbers of the character. The formula has a number of uses but we are at present interested in its connection with identifying characters in the print position. It looks formidable, but we will let the computer worry about that part.

First of all, we will reduce the formula by considering only the top byte of the character in question. So B = zero. And then we will use a DEF FN(A) to store the awkward expression that remains.

Now with these ideas in mind, we will construct another test routine similar to the preceding ones and call it figure 1.

```

1 DEF FN A(L,C)=16384+2048*IN
T (L/8)+32*(L-8*INT (L/8))+C
2 INPUT B$
4 FOR N=1 TO 35
6 PRINT AT 21*AND,31*AND;B$
8 NEXT N
10 LET L=10: LET C=15
30 LET LL=L: LET CC=C
40 LET L=L+(INKEY$="8" AND L<2
1)- (INKEY$="7" AND L>0)
50 LET C=C+(INKEY$="8" AND C<3
1)- (INKEY$="5" AND C>0)
60 PRINT AT L,C:
70 IF PEEK (FN A(L,C))=60 THEN
BEEP .05,.25
80 PRINT "E"
90 PRINT AT LL,CC;" " AND (LL<
>L OR CC<>C)
100 GO TO 30

```

FIGURE 1

Here we added Line 1 that contains the expression, valid for the top byte of the character. Line 70 is changed accordingly, and again we will use a value of 60 in the top byte for use with the copyright symbol as a target. RUN this and satisfy yourself that it works OK. Try some graphic symbols for the target, but do not forget to alter the byte value in Line 70 to agree with that of the new character.

You might wonder why we need this method, considering that it has been arranged to work like the preceding method that used system variable 23684/5, discussed in an earlier issue. As such, it is duplicative, but there are occasions when it is desirable to detect a character by the second or third byte in its make-up. Then, only this formula will do the trick.

As before, we have the option of using combinations with other methods of print position detection, or we can use more than one byte of the character to differentiate from others.

In a future article of this series we will discuss POINT as a means of

identifying a character in the print position. POINT has some very unusual applications, as we shall see.

QTS

SHORT TS1000 PROGRAMS by Chuck Dawson

Below are some short programs for use on the TS1000 (2K). The programs will also work on the TS1000 with 16K or on the TS2068 with slight modifications.

```

10 SAVE "LOAN"
15 POKE 10510,234
20 PRINT "AMOUNT OF LOAN?"
30 INPUT A
40 PRINT A
50 PRINT "ANNUAL INTEREST RATE"
60 INPUT A
70 PRINT A
80 PRINT "LOAN DURATION IN MONTHS"
90 INPUT M
100 PRINT M
110 LET N=(A/100)/12
120 LET D=(1+(N))**M
130 LET O=(1-(1/D))
140 LET P=A*(O/D)
150 LET P=.01*INT (P*100+1)
160 PRINT "PAYMENT$";P
170 PRINT
180 SCROLL
190 FOR I=1 TO M
200 SCROLL
210 PRINT AT 0,0;"NO. INTERST"
220 PRINT AT 0,0;"PRINCIPAL BALANCE"
230 LET Y=A*P
240 LET Y=INT (Y*100+.5)/100
250 LET R=A-Y
260 IF R>A THEN LET R=A
270 LET A=INT (.8*100+(A-R))/10
280 PRINT AT 21,8;".00";TAB 10;
290 PRINT AT 21,8;".00";TAB 20;".00"
300 PRINT AT 21,0;I;TAB (4+(Y<1
310)+(Y<100)+(Y<10));Y;TAB (14+(R
320)+(R<100)+(R<10));R;TAB (22+
330)+(R<100)+(R<10));A;TAB (123+
340)+(R<100)+(R<10));A
350 NEXT I

```

```

5 REM "SLOTS"
10 LET T=0+0
20 GOSUB VAL "500"
30 PRINT AT 15,0;" "
40 LET T=T-30N P1
50 IF T<NOT P1 THEN STOP
60 PRINT AT 15,9;T;" "
70 FOR I=30N P1 TO VAL "17"
80 LET A=30N P1+INT (RND*5.5)
90 IF I>13 THEN GOTO 95
100 LET B=30N P1+INT (RND*5.5)
110 IF I>0 THEN GOTO VAL "110"
120 LET C=30N P1+INT (RND*5.5)
130 PRINT AT 0,1;A$(C);TAB 12;A
140 TAB 20;A$(A)
150 NEXT I
160 IF A=B OR A=C OR B=C THEN G
170 GOTO 300
180 PAUSE 424
190 GOTO 30
200 IF A=B AND A=C AND A=4 THEN
210 GOTO 250
220 IF A=B AND A=C THEN GOTO 30
230 PRINT AT 15,0;"PAYOFF $2"
240 LET T=T+2
250 PRINT AT 15,9;T;" "
260 RETURN
270 FOR I=30N P1 TO 50
280 PRINT AT 15,0;"JACKPOT$";A
290 NEXT I
300 LET T=T+0+0
310 GOTO 230
320 PRINT AT 15,0;"PAYOFF $3"
330 LET T=T+5
340 GOTO 230
350 PRINT " "
360 PRINT " "
370 PRINT " "
380 PRINT " "
390 PRINT " "
400 PRINT " "
410 PRINT " "
420 PRINT " "
430 PRINT " "
440 PRINT " "
450 PRINT " "
460 PRINT " "
470 PRINT " "
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570 PRINT " "
580 PRINT " "
590 PRINT " "
600 PRINT " "
610 PRINT " "
620 PRINT " "
630 PRINT "TOTAL = $20"
640 RETURN

```

```

10 REM "ADDRESS BOOK"
20 PRINT "1-ADD NEW NAME", "2-
LOOK UP ADDRESS/PHONE NO.", "3-BA
UE TO TAPE"
30 INPUT A
40 GOTO (200+A)
50 LET A$=Z$
60 LET Z=Z+1
70 POKE 16627,Z
80 GOTO 1
90 POKE 16736,Z
100 POKE 16759,Z
110 LET Z$=""
120 IF A$(1 TO LEN Y$)=Y$ THEN
LET Z$=A$
130 FOR J=1 TO LEN Z$
140 IF Z$(J) <> "E" THEN PRINT Z$
(J)
150 IF Z$(J)="E" THEN PRINT
160 NEXT J
170 RETURN
200 PRINT "ENTER NAME"
210 INPUT Y$
220 LET Z$=Y$+"E"
230 PRINT "ENTER STREET ADDRESS"

240 INPUT Y$
250 LET Z$=Z$+Y$+"E"
260 PRINT "ENTER CITY AND ZIP"
270 INPUT Y$
280 LET Z$=Z$+Y$+"E"
290 PRINT "ENTER PHONE NO."
300 INPUT Y$
310 LET Z$=Z$+Y$+"E"
320 CLS
330 GOTO 50
400 PRINT "ENTER NAME"
401 INPUT Y$
403 CLS
405 FOR I=38 TO Z-1
410 GOSUB 90
420 NEXT I
430 PAUSE 4E4
440 CLS
450 GOTO 1
600 SAVE "ADDRESS BOOK"
610 CLS
620 GOTO 1

```

```

*****
~
* * * NEW PRODUCTS * *
~
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*****

```

REVIEW: TS2068 SPEECH SYNTHESIZER
by Thomas Beutel

DESCRIPTION: A speech synthesizer software program for use with the TS2068.

MANUFACTURER:
TAD PAINTER
PO Box 166055
Irving, TX 75016

AVAILABILITY: Directly from manufacturer or through many T/S dealers.

SUGGESTED RETAIL: \$16.95.

The speech program for the TS2068 is the same as the TS1000 version reviewed in the Fall 1985 issue of *QuarterS*, but with enhancements based on the greater power of the TS2068. The program uses the internal speaker, thereby eliminating the need to buy an external speaker. It also allows the use of English sentences as inputs to the speech program, provided that each word is initialized beforehand. This approach is more self documenting than using word numbers. More about this later.

The speech synthesis package contains a tape of 273 words, demos and utilities. The documentation is very clear, and the program is easy to use. The word libraries contain words to speak numbers, days, months, and a rich assortment of verbs, nouns, and computer related words. The libraries are separated into four that contain all the words, and one that contains just the numbers. You can only load in one library at a time, but a "compile" utility allows you to assemble words into your own libraries. The documentation mentions the availability of a \$39.95 hardware and software package which allows you to add your own words.

The quality of the speech is quite good, and I had no trouble understanding each word without looking at the screen. The volume is just right too. For those who want to hook up an external speaker, the

speech is available at the MIC jack.

As mentioned before, this program allows the use of "English" sentences as inputs. This is done by assigning variable names with their corresponding numbers. As an example, if you wanted to say "THE TIME IS 11:45", you enter:

```
10 LET THE-231: LET TIME-241: LET  
IS-139: LET ELEVEN-11: LET  
FORTY-40: LET FIVE-5
```

```
20 LET S$="THE TIME IS ELEVEN FORTY  
FIVE": GOSUB 2000
```

If you initialized all the numbers, you could write a simple talking clock program.

This program makes it easy to add speech to any of your programs. It is a definite must for those who want to add an extra dimension to their programs and games.

QTS

SCREEN READER
by Alvin Albrecht

In the FALL-85 issue of QuarTerS, Warren Fricke's column, TS2068 BASIC TUTOR, and Martin DeBoniface's article on a SELECTIVE SCREEN\$ LINE COPY routine embarked on methods a programmer could use to simulate an improved SCREEN\$ command from BASIC that could read letters, numbers, and graphics. Unfortunately, the methods they offered were either too slow or not specific enough. This is why I developed SCREEN READER.

Screen Reader is an extremely fast and versatile m/c subroutine that reads a character off the screen from any desired print location. It can read letters, numbers, symbols, UDGs, and any design created by any of the graphic commands such as CIRCLE, DRAW, PLOT, OVER, INVERSE, etc.

This is how to use it. First, type in the m/c loader program listed in Figure 1. This program POKES the machine code at the highest memory location possible in the computer, just below the UDGs. It also sets RAMTOP* just below the routine (address 65331) so that your BASIC program won't overwrite it. Now that the machine code is in computer memory, you can NEW the loader (the code will remain intact). To activate it, simply type in a BASIC statement that indicates the character position you would like to "read".

eg- PRINT AT 12,10; ---if you would like to read the character in position 12, 10.

Next, type in RANDOMIZE USR 65352. The character you wanted to read should now be in graphic "A". Fast, wasn't it?

NOTE: RAMTOP is a system variable that tells the computer where the available RAM ends. No BASIC commands except POKE (not even NEW) can alter the values above RAMTOP. That is why UDGs survive NEWS - RAMTOP is normally set just below the UDGs.

To incorporate Screen Reader into your own programs, you can do any of the following:

1. Actually have a copy of Figure 1 in your program somewhere.
2. SAVE the machine code as bytes by using: SAVE "Screen R." CODE 65352,16 and in your program have a line that loads it from tape like: LOAD "Screen R." CODE 65352 : POKE 23730,71 : POKE 23731,255
3. POKE it into a REM statement within your program. (Screen Reader has been designed so that it can be moved about in memory without modification).

This is how it works. The routine uses a system variable called DGCC. This holds the address in pixel memory of the top row (a character is made of eight rows) of the next print position. See Warren Fricke's column on PRINT POSITION USING SYSTEM ADDRESS 23684/23685 in the WINTER-86 issue of QuarTerS for more explanation. Each of the rows of the character is separated by a value of 256 because the computer screen memory does 8 scans of 32 characters before coming to the same character it was printing. Because this is so hard to explain and very confusing, I will not get into how I figured that out, but if you want to read up on it, check Appendix C in your manual. Just remember that DGCC points to the address in pixel memory of the top row of the next print position, and that the next row of the same character block is 256 addresses away. Anyway, the routine PEEKs each of these addresses as they are incremented and POKES them into the UDG memory, thus becoming a perfect copy of the character position on the screen.

As an example, I have included Figure 2 to illustrate the speed and versatility of Screen Reader. I hope you get as much use out of Screen Reader as I will.

FIGURE 1: THE M/C LOADER

```

5 DATA 237,91,123,92,42,132,9
2,6,8,126,18,19,36,16,-6,201
10 FOR Z=65352 TO 65367
15 READ A : POKE Z,A
20 NEXT Z
25 POKE 23730,71 : POKE 23731,255

```

FIGURE 2: SELECTIVE SCREEN COPY

```

5 FOR Z=5 TO 15
10 FOR X=0 TO 31
15 PRINT AT Z,X;
20 RANDOMIZE USR 65352
25 LPRINT "A";
30 NEXT X
35 NEXT Z

```

Explanations of lines:

```

5 rows to copy
10 columns to copy
15 print position to copy
20 initialize Screen Reader
25 print character to printer
30 next column
35 next row

```

QTS

REVIEW: PENETRATOR
by John S. Hagen

REQUIREMENTS: TS2068.

AVAILABILITY: Available from many T/S dealers.

PRICE: List \$19.95.

Penetrator is a game which can be played by one or two players. In this game you are a spaceship traveling through mountain ranges, hills and caves. Your objective is to get to the last stage and drop a bomb into the enemy's neutron bomb installation or crash into the canyon walls. If you do destroy the enemy's neutron bomb installation you must return the way you came or face death.

Throughout the game missiles are being shot towards you from the mountains or at ground level. The third stage is probably the most treacherous. You must maneuver your way through small tunnels. Hit the

tunnel and your ship is destroyed. If you survive you must use your fire button and your bombs to blast the floating cats. The cats are small, black round objects, which have the face of a cat. These cats can move up and down very quickly. You must shoot your way through the third stage to make it to the fourth stage.

With the program Penetrator you can also become a landscape editor by raising or flattening the mountain ranges, by drilling caverns, and you can also remove enemy missiles and radar installations.

Beginners who play this game may choose to play 1 or 2 players, become a landscape editor or play in the Trainer mode. In the Trainer mode you may start at any of the four stages, and you have an endless number of ships to practice with before getting used to the game. I must admit it took a while for me to get to the last stage, but with a little effort I made it. Penetrator is one of the most exciting games I've played with the TS2068. I encourage all who like computer games to get Penetrator.

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```

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TS2068 MACHINE CODE HELPERS
by Heinz H. Grote

Below are two little programs that might interest you. Whenever you use a BASIC program in conjunction with a program that contains machine code; or if you want to add machine code to your BASIC program, you have to know how your program is stored in memory. This is generally the case for programs that analyze or modify your program.

The first program gives you the START- and END-address together with the length of your program, and tells you the numbers of the first and the last line in BASIC.

The second program prints out the starting location of each line, its BASIC number, its length, and the text ended by (. Numbers are stored in memory twice; once as you enter them; and then as floating point values.

In order to make the printout easier to read, the floating point numbers are listed as ##### for "number" and 5 digits. Asterisks are also used behind the line number and the length value to indicate that they are stored as 2 bytes. This way the location at which a particular value is stored can be counted from the starting location of its line. At the end the location of the last byte of the program is given.

PROGRAM ONE:

```

100 LET A=PEEK 23635+256*PEEK 2
3636
110 LET C=PEEK (A+2)+256*PEEK (
A+3)
120 LET E=A+C+3: IF A+E>65535 T
HEN GO TO 150
130 LET F=PEEK E
140 IF F=13 THEN GO TO 160
150 PRINT "'': PRINT INVERSE 1;
" Location of last instruction"
; INVERSE 0;TAB 10;"- ";A-1;" -"
: STOP
160 LET B=256*PEEK A+PEEK (A+1)
170 PRINT CHR$ 64: PRINT A;"
";B;" * ";C;" *": PRINT "
:

```

```

180 FOR I=1 TO C-1
190 LET D=PEEK (A+I*3)
200 IF D<>14 THEN GO TO 230
210 PRINT " ";CHR$( D);***** ";
220 LET I=I+5: GO TO 240
230 PRINT CHR$( D);
240 NEXT I
250 LET A=A+C*4
260 GO TO 110

```

PROGRAM TWO:

```

100 LET A=PEEK 23635+256*PEEK 2
3636
110 PRINT "START : ";A: LET B=A
120 LET C=PEEK (A+1)+256*PEEK A
130 LET D=PEEK (B+2)-256*PEEK (
B+3)
140 LET E=PEEK (B+D+3)
150 IF E<>13 THEN GO TO 190
160 LET B=B+D+4
170 LET F=D
180 GO TO 130
190 LET G=B-A
200 LET H=PEEK (B-F-3)+256*PEEK
(B-F-4)
210 PRINT "LENGTH: ";G;" Bytes"
220 PRINT "END : ";B-1
230 PRINT "'FIRST Line: ";C
240 PRINT "LAST Line: ";H

```

015

[illegible]

SHORT T/S TIPS

These tips were sent in by Peter Stawasz, Clio, MI:

Tired of paying a high price for TS2040 thermal printer paper? Well, according to Gerald L. White, Customer Service Manager for the Timex Corporation, there is a viable alternative for the rare TS2040 printer paper--Radio Shack! Radio Shack sells TP-10 thermal printer paper, catalog number 26-1332, for its own thermal printer the TP-10. A two-roll package costs \$3.95 and in my opinion is much darker than when printed on TS2040 paper. The only difference between the TP-10 paper and the TS2040 paper is 1/4 of an inch in width--simply, the TP-10 paper is only that much narrower. Now if you are in need of a substitute source of thermal printer paper, go to Radio Shack!

Having trouble with SAVES and LOADs on your TS1000, ZX81 or TS1500? Try this:

1. Turn down the volume level to zero before SAVEing.
2. SAVE.
3. Return to normal level at which you LOAD your programs.

You should now have a program that will reliably LOAD 98+ percent of the time.

EDITOR'S NOTE: This tip eliminates the feed-back loop sometimes caused when SAVEing and LOADING. This even holds true on the TS2068, but to a lesser extent. You could also unplug the EAR wire from both the computer and the recorder when you are SAVEing.

If you have any SHORT TIPS please send them in and we will print them as space permits. Even if you feel the tip is not of much importance you may be helping other T/S users who have not thought of your idea. We will pay \$5.00 for each tip printed.

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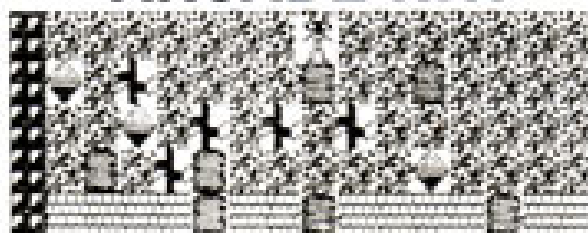
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Diamond Mike is 100% 16K Machine Code!

BASIC CAN BE FASTER
A dozen easy ways!
by Bill Johnson

PART ONE OF TWO

BASIC is the mostly easily understood and most used of all program languages. But at times the BASIC language can be slow when it is processing your programs. The main reason that BASIC is slow is due to the fact that BASIC is a very flexible language. Because of this flexibility it has to check and double-check every instruction when it is running a program. Another reason is that BASIC is economical of cost and memory. This is why it checks your instructions as the program runs. Other languages are RUN in a two part process. First the program is "compiled", converted to a form of machine code, before it is executed. During the second stage only the machine code portion is run which results in much greater speed.

A few different ways can be used to speed up your programs. Most of these ways are expensive or difficult. First you could buy a BASIC compiler. There are a few products available for the T/S computers, but none of them recognize the entire set of T/S BASIC commands. These will work fine if you are working with limited programs but will not meet your needs all the time. You could also buy another language for your computer, such as FORTRAN, Pascal, LOGO, or CP/M. Depending on the program they may offer faster computing, though you may lose some flexibility and the convenience of BASIC. You will also have to learn a new language.

The fastest language is machine language which feeds your instructions as binary ones and zeros. Machine language is hundreds of times faster than BASIC since the computer understands this language. Just think of speaking to someone from another country when you don't understand each others language. If you use a translator communication is slowed down while the translator is converting your language to the other. This is what happens when you

use BASIC. You are speaking BASIC while the computer understands Binary codes only. While machine language is faster it is very difficult to program and could take a very long time to master.

So now we are back to where we started. Let's speed-up your BASIC programs. Here are a dozen ways:

1. Define variables in order of use. Define the ones most used first. The program always goes to the top of the variable list and works its way down until it finds a particular variable. If a part of a program is used repeatedly its variables should be defined first as this will speed up the program. Remember all types of variables are stored together (i.e., floating point, string and integer), so you must consider all types when you are deciding on the order to define them.
2. Retrieving a variable is much faster than interpreting a decimal number. If your program uses a constant frequently define it as a variable. The larger the number the greater the savings.
3. Avoid using higher math functions if possible. Of course there may be times when this is not possible, but if it is, the time savings are considerable. If certain math functions are used repeatedly in a loop, it may be faster to calculate the values first and pass them into the loop as variables.
4. Avoid array variables. As with number 3 above, there are many cases where array variables are an integral part of your program. In other cases they may be used as a convenience. It should be stressed that they are very slow. Finding a variable may be three to five times as long as finding a simple variable and still more time is wasted to interpret the subscript. The total time wasted can be up to 20 times that of a simple variable.



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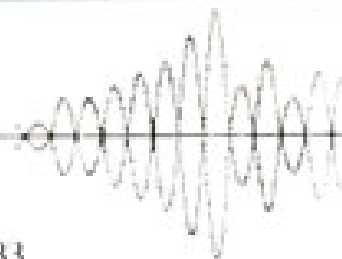
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